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ABSTRACT

Summarized are results of an investigation of elementary age listeners' preferences for the rate of presentation of recorded information in which it was found that children, when given the opportunity, will manipulate the rate of presentation of recorded information, that they have a preference for rates of presentation, and that individual students' preferences vary widely. (LS)

AN EXAMINATION OF LISTENING RATE

by

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for the Handicapped

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INTRODUCTION

When a child is able to successfully deal with reading, *reading becomes the preferred mode for receiving information.* For most people, listening is the preferred mode until that time when reading takes over. One of the reasons why reading evolves as preferred over listening is due to the high emphasis that is put on reading by society. However, numerous other factors affect the reading/listening preference question. These other factors are those which can be controlled by the individual and serve to reinforce the societal influence on reading as a preferred mode.

Reading has advantages for the reader that can not be paralleled by a listening task. The reader may skim over passages and read in detail when an important passage is encountered. The reader may back up easily and read a passage over again (and again, and again) to increase comprehension. The reader may jump ahead, see where the written material is heading, and then return to the beginning and read the passage with a clear understanding of where the material is heading. These advantages are found in reading and are typically not present in listening.

But what are the advantages of listening that are not found in reading? A listening task allows the listener to attend and, at the same time, participate visually and/or physically in another task. In other words, the listener can do many other things while receiving information. For the listener, a tape recording can provide a wealth of information not found in a book. Nuances of speech, environmental sounds, rhythm and intonation can be found in a listening task. These factors assist in creating a reality factor that is not found in reading.

This paper addresses itself to one of the factors that makes reading preferred to listening. This factor, the rate of presentation of information, is accommodated well in reading. The reader, based on his own individual preference, can read as fast or as slow as he desires. The reader is able to adjust his reading rate to suit his particular reading ability, to suit his mood, to match the difficulty of the material, and to correspond to the necessity of retaining the information that is presented. The listener, however, is dependent upon the rate of presentation of the person delivering the information. This dependency is found in both the face-to-face and in pre-recorded informa-

tion delivery. In the face-to-face situation the speaker may, however, request the sender to increase or decrease the rate of presentation. ("Slow down, you're talking too fast!") This is not possible when listening to recordings. The speed of a recording has been established by the narrator and unless you want the narrator to sound like Donald Duck you'll have to live with the speed *he* has selected.

The development of speech compression technology has made it possible for the *listener* to alter the rate of presentation of recorded material in much the same manner that the reader does. The speech compressor, an electro-mechanical device for speeding up and slowing down tape recordings without altering the pitch of the recording, can be used by an individual listener to alter the rate of presentation to suit his preference. Until recently, the purchase of speech compressors has been restricted to only a few agencies and schools due to the high cost of the compressor. However, the development of sub-miniature electronic circuitry has now brought the cost of purchase of a speech compressor within reason for most all schools. In fact, the price will soon drop to a point where *purchase of speech compressors will be feasible by any individual who wants one!*

Most of the studies conducted with the use of compressed speech have focused on the upper limits at which a listener can comprehend compressed recorded material without a significant decrease in comprehension. Through these studies we have learned that we can comprehend recorded material at rates substantially higher than we use on a day-to-day basis.

What happens, though, when we ask the listener to select his own preferred rate? Few studies have dealt with the question of listener preference for rate of presentation. To fully understand the use of compressed speech necessitates not only an understanding of the potential rate a listener *can* listen at, but also the rate which the listener *will* choose to listen at. Through a complete understanding of both aspects, (listener preference and listener potential), it will be possible to better understand the self-paced listening behaviors that will be evident when inexpensive speech compression is used on a widespread basis. In 1967, Friedman, Graae, and Orr reported:

> Given the state of current technology, self-pacing is of limited practical value since it is not feasible to make available machines for extensive individual use. However, it may be practical to provide a machine for a school library for individual use as an auditory review mechanism for material with which the student is already familiar.

LISTENING RATE STUDY

A study was conducted to ascertain whether or not children do manifest a preference for rate of presentation of recorded information. It was assumed that, like a reader's reading rate, a listener likewise would have a listening rate.

A review of past studies indicated that listeners can accommodate rates of presentation as high as 275-300 words per minute. (Fairbanks *et al*, 1957; Bixler *et al*, 1961; Foulke *et al*, 1962; Orr *et al*, 1965; Sticht, 1968) In terms of preference, however, few studies have been conducted. Foulke (1965) mailed samples of compressed material to blind listeners. They were asked on a questionnaire which rate they preferred. Forty-five percent responded that they preferred 275 words per minute. Foulke and Sticht (1966) asked college students to listen to compressed speech that was gradually speeded up and slowed down. The students were asked to indicate when the speed matched their preference. The mean preferred word rate was 207 words per minute.

The only reported study that examined rate preference and allowed the subjects to actually manipulate the rate was conducted by Friedman, Graae, and Orr (1967). In their study, the subjects listened to both self-paced material (they could alter the rate) and externally paced material (the rate was pre-set and could not be altered). They found that, on the self-paced passages, the subjects showed a mean preference of about 254 words per minute. These findings were confounded, however, due to a possible modeling effected from the externally paced passages. It was felt that the listeners attempted to "match" the self-paced rate to the externally paced rate (262.5 wpm).

Though these studies attempted to ascertain rate preference, it still had not been shown that listeners *do* have such a preference.

Forty-eight third, fourth and fifth grade students listened to a story divided into approximately equal quarters. Each of the four segments of the story was pre-altered to a different rate. The segments were presented at 100 words per minute, 150 words per minute, 200 words per minute, and 275 words per minute. During each segment of the story the listener was able to alter the rate by moving a single knob on a plain box that was positioned in front of the student. The students listened through headphones and were also provided a set of four pictures (one for each segment) to focus their visual attention. Throughout the entire listening experience, the student's manipulation of the rate control knob was documented on a strip chart recorder for later analysis.

FINDINGS

It was found that all 48 students selected rates that comprised a band width that was less than the band width of the presentation rates. (The band width of the presentation rates was 175 words per minute.) This finding indicates a *convergence behavior on the part of all students* which supports the presence of rate preference in a listening task.

Further analysis showed that 45 of the students demonstrated convergence toward a common point on at least three (at least 75%) of the listening segments.

TABLE ONE

MOVEMENT TOWARD CONVERGENCE BY NUMBER OF SUBJECTS

	Convergence Shown By Four Segments	Convergence Shown By Only Three Segments	Convergence Shown By Three or Four Segments
Number of Subjects	19	26	45

When only those students were considered who showed a convergence that was no more than 40 words per minute in band width, a total of 15 students were eliminated.

TABLE TWO

DEMONSTRATED MANIFEST PREFERENCE FOR RATE

	# of Subjects		% of Subjects	
	Rate Preference Demonstrated	No Rate Preference Demonstrated	Ra.e Preference .Demonstrated	No Rate Preference Demonstrated
All Grades	33	15	68.75	31.25
Third Grade	12	4	75.0	25.0
Fourth Grade	10	6	62.5	37.5
Fifth Grade	11	5	68.75	31.25

The 33 students who showed this narrow convergence behavior demonstrated a variety of preferred rates ranging from 275.5 words per minute to 167 words per minute. The average rate preference for the total group was found to be 207.6 words per minute.

TABLE THREE

MEAN MANIFEST PREFERENCE RATE BY SUBJECT

Subject #	Grade	Mean Manifest Preference Rate X
42	3	275.5
18	4	264
20	4	261
19	4	240
16	4	235.25
44	3	235
14	4	233.5
30	5	221.5
31	5	218
29	5	217.25

Subject #	Grade	Mean Manifest Preference Rate X
43	3	217
3	4	216.125
39	3	214.3
22	3	206.75
7	4	206
32	5	205.75
45	3	205
48	5	203.7
17	4	199.25
10	3	196
23	3	195.25
21	4	193.5
9	3	193
33	5	193
28	5	192.25
12	3	189.25
34	5	187
25	3	180.5
5	4	176
37	5	173.24
11	5	170.3
53	5	170.25
8	3	167

$\overline{X}$ = 207.62, S.D. = 26.87

DISCUSSION

The findings that have been presented are only a portion of the total findings that were drawn from the study. (A detailed description of the study can be found in Levine, 1974.) From these findings it can be seen that:

a) children, when given the opportunity, will manipulate the rate of presentation of recorded information;

b) children do have a preference for rate of presentation of recorded information; and

c) individual students show wide variance in their preferred rates.

Implications for the development of efficient listening behaviors. This study has suggested a disparity between the rate at which a student *can* listen to recorded information and the rate at which he *prefers* to listen to recorded information. Further substantiation of this disparity in future research will assist in establishing the parameters of the task of training a listener to utilize efficient listening behaviors. Many attempts have been made to train a listener to comprehend at high rates of presentation. These attempts have met with varying degrees of success. With the advent of inexpensive speech compression playback equipment, many listeners will for the first time have the opportunity to self-pace the listening task. Their listening will not be guided by an understanding of how fast they can listen, but instead by how fast they want to listen.

To create an efficient listening environment for the listener demands a training procedure that will successfully increase the rate at which a listener prefers to listen. The degree of efficiency depends on the ability of the training procedure to move the preference to the point of maximum rate input. The starting point for the development of training procedures of this nature is the establishment of the limits of the training problem. To evaluate the success of any training procedure demands that you know where the learner is prior to training so that an assessment of rate preference change can be made. An appropriate training procedure is one which decreases the difference between manifest preference for rate of presentation and potential rate of presentation. This study has established the presence of manifest preference for rate and has also suggested the presence of a manifest preference for rate that is below the potential rate for a listener.

Previous research has substantiated that most people prefer learning by reading to learning by listening. It is felt that this preference is fostered through the inability to successfully individualize the listening task. The ability to self-pace the listening task, the design of instructional materials that capitalize on self-paced listening environments, and training procedures that make self-paced listening more efficient will move learning by listening a step closer to learning by reading. The implications for education and learning are great. Learning by listening may eventually become a viable alternative for many students who are not successful with learning by reading.

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